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EXAMINER

CHOW, JEFFREY J

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2628

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/549,416	Applicant(s) HUTCHINSON ET AL.	
	Examiner Jeffrey J. Chow	Art Unit 2628	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-53 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-53 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION***Drawings*****INFORMATION ON HOW TO EFFECT DRAWING CHANGES****Replacement Drawing Sheets**

Drawing changes must be made by presenting replacement sheets which incorporate the desired changes and which comply with 37 CFR 1.84. An explanation of the changes made must be presented either in the drawing amendments section, or remarks, section of the amendment paper. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). A replacement sheet must include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of the amended drawing(s) must not be labeled as "amended." If the changes to the drawing figure(s) are not accepted by the examiner, applicant will be notified of any required corrective action in the next Office action. No further drawing submission will be required, unless applicant is notified.

Identifying indicia, if provided, should include the title of the invention, inventor's name, and application number, or docket number (if any) if an application number has not been assigned to the application. If this information is provided, it must be placed on the front of each sheet and within the top margin.

Annotated Drawing Sheets

A marked-up copy of any amended drawing figure, including annotations indicating the changes made, may be submitted or required by the examiner. The annotated drawing sheet(s) must be clearly labeled as "Annotated Sheet" and must be presented in the amendment or remarks section that explains the change(s) to the drawings.

Timing of Corrections

Applicant is required to submit acceptable corrected drawings within the time period set in the Office action. See 37 CFR 1.85(a). Failure to take corrective action within the set period will result in ABANDONMENT of the application.

If corrected drawings are required in a Notice of Allowability (PTOL-37), the new drawings MUST be filed within the THREE MONTH shortened statutory period set for reply in the "Notice of Allowability." Extensions of time may NOT be obtained under the provisions of

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37 CFR 1.136 for filing the corrected drawings after the mailing of a Notice of Allowability. The drawings are objected to because Figures 1 – 3 should caption what each components/parts are that are not easily understood by one of ordinary skill in the art, specifically reference numeral 100 – 114, 202 – 218, and 302 – 318. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1 – 23 are rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. Based on *Diamond v. Diehr*, 450 U.S. 175, 184 (1981); *Parker*

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v. Flook, 437 U.S. 584, 588 n.9 (1978), *Gottschalk v. Benson*, 409 U.S. 63, 70 (1972); *Cochrane v. Deener*, 94 U.S. 780, 787-88 (1876), and *In re Bilski*, 88 USPQ2d 1385 (Fed. Cir. 2008)

decisions indicate that a statutory “process” under 35 U.S.C. 101 must (1) be tied to another statutory category (such as a particular apparatus), or (2) transform underlying subject matter (such as an article or material) to a different state or thing. While the instant claim(s) recite a series of steps or acts to be performed, the claim(s) neither transform underlying subject matter nor positively tie to another statutory category that accomplishes the claimed method steps, and therefore do not qualify as a statutory process. For instance, the image control method including steps of generating transformed images is of sufficient breadth that it would be reasonably interpreted as a series of steps completely performed mentally, verbally or without a machine. The Applicant has provided no explicit and deliberate definitions of “generating transformed images” to limit the steps to the electronic form, and the claim language itself is sufficiently broad to read on a person randomly selecting images and applying transformations onto the selected images in an iterative fashion.

Claims 24 and 28 – 35 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Though claims 24 and 28 – 35 recite “system”, “fractal generator” and “fractal generation system” comprising various components and means, the original specification discloses, the fractal generator is implemented in software (page 5, lines 4 and 5). Therefore, the “system”, “fractal generator” and “fractal generation system” are nothing more than functional descriptive material per se, and hence is nonstatutory. Descriptive material can be characterized as either “functional descriptive material” or “nonfunctional descriptive material.” In this context, “functional descriptive material” consists of data structures and

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computer programs which impart functionality when employed as a computer component. (The definition of “data structure” is “a physical or logical relationship among data elements, designed to support specific data manipulation functions.” The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) “functional descriptive material” is nonstatutory when claimed as descriptive material per se. Warmerdam, 33 F.3d at 1360, 31 USPQ2d at 1759. When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized.

Claims 25 and 36 – 53 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Though claims 25 and 36 – 53 recites using an apparatus/system to create a image data, the image data is being claimed. The image data is non-functional descriptive material per se, and hence is nonstatutory. Nonfunctional descriptive material that does not constitute a statutory process, machine, manufacture or composition of matter and should be rejected under 35 U.S.C. § 101. Certain types of descriptive material, such as music, literature, art, photographs and mere arrangements or compilations of facts or data, without any functional interrelationship is not a process, machine, manufacture or composition of matter. Nonfunctional descriptive material may be claimed in combination with other functional descriptive multi-media material on a computer-readable medium to provide the necessary functional and structural interrelationship to satisfy the requirements of 35 U.S.C. § 101.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 3 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "substantially independent" in claim 3 is a relative term which renders the claim indefinite. The term "substantially independent" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 – 6, 8, 9, 11, 13 – 15, 17 – 20, 22 – 32, 34, 36 – 39, 41, and 43 – 49 are rejected under 35 U.S.C. 102(b) as being anticipated by Van Roy (US 5,831,633).

Regarding independent claim 1, Van Roy teaches a fractal generation process, including

(i) randomly selecting images (column 6, lines 61 – 64: choose a component of the drawing; column 8, lines 54 – 60: random replacement) from a set of input images (column 6,

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lines 41 – 53: plurality of components in the template; column 6, lines 54 – 60: a component is drawn as a line segment, a curve, an area, or an imported picture),

(ii) selecting transformation functions from a set of transformation functions (column 6, lines 61 – 64: a chosen component is replaced by a properly-oriented and possibly deformed or transformed copy of one of the shape's templates),

(iii) generating transformed images by applying the selected transformation functions to the selected images (Figures 5(a) and 5(b): the leftmost line segment of the template is transformed and replaced),

(iv) generating an output image by combining the transformed images (Figure 5(b)),

(v) repeating steps (i) to (iv) to generate a set of output images (column 7, lines 8 – 10: keep choosing components and replacement templates, and doing replacement steps until reaching the desired level of detail in the image), and

(vi) repeating steps (i) to (v) using said set of output images as said set of input images to generate a new set of output images (column 7, lines 2 – 4 and Figure 1: step 130 chooses a component from the template and step 140 replaces the chosen component by a chosen template. Since the steps are recursive, when back to step 130, the chosen component that was replaced is now selectable).

Regarding dependent claim 2, Van Roy teaches said output images represent respective fractals (Figures 6(a) – 6(d)).

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Regarding dependent claim 3, Van Roy teaches repeating step (vi) until said new set of output images is substantially independent of the first set of input images used in the process (Figures 6(a) – 6(d)).

Regarding dependent claim 4, Van Roy teaches the number of selected transformation functions is less than the number of transformation functions in said set of transformation functions (column 9, lines 46 – 53: brightness, contrast, repetition, depth, and interpolation type).

Regarding dependent claim 5, Van Roy teaches the step of selecting transformation functions includes selecting an iterated function system from a set of iterated function systems, each iterated function system including a set of transformation functions (column 9, lines 46 – 53: repetition).

Regarding dependent claim 6, Van Roy teaches the selection of an iterated function system is based on selection probabilities associated with said iterated function systems (column 8, lines 54 – 60: random replacement uses probability function).

Regarding dependent claim 8, Van Roy teaches said transformation functions include geometrical transformations (column 7, line 6: reduced copy or scaling).

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Regarding dependent claim 9, Van Roy teaches said geometrical transformations include scaling and translation (column 7, line 6: reduced copy or scaling; Figures 5(a), 5(b), and 6(a) – 6(d): rotation and translation has occurred during the replacement steps).

Regarding dependent claim 11, Van Roy teaches said geometrical transformations are contractive transformations (Figures 5(a), 5(b), and 6(a) – 6(d): each replacement step reduces the size of the selected template).

Regarding dependent claim 13, Van Roy teaches said transformation functions include transformations of at least one of brightness and color (column 9, lines 46 – 53: brightness).

Regarding dependent claim 14, Van Roy teaches each of said transformation functions is represented by one or more parameters (column 9, lines 46 – 53: brightness, contrast, repetition, depth, and interpolation type).

Regarding dependent claim 15, Van Roy teaches generating said transformation functions (column 9, lines 46 – 53: brightness, contrast, repetition, depth, and interpolation type) and said selection probabilities (column 8, lines 54 – 60: random replacement uses probability function).

Regarding dependent claim 17, Van Roy teaches generating said set of input images (column 7, lines 2 – 4 and Figure 1: step 130 chooses a component from the template and step

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140 replaces the chosen component by a chosen template. Since the steps are recursive, when back to step 130, the chosen component that was replaced is now selectable).

Regarding independent claim 18, Van Roy teaches a fractal generation process, including randomly selecting (column 6, lines 61 – 64: choose a component of the drawing; column 8, lines 54 – 60: random replacement) from a set of input images (column 6, lines 41 – 53: plurality of components in the template; column 6, lines 54 – 60: a component is drawn as a line segment, a curve, an area, or an imported picture),

transforming the selected images (column 6, lines 61 – 64: a chosen component is replaced by a properly-oriented and possibly deformed or transformed copy of one of the shape's templates), and

combining the transformed images to generate a set of output images (Figure 5(b)), and iterative repetition of these steps using the set of output images of each iteration as the set of input images for the next iteration (column 7, lines 2 – 4 and Figure 1: step 130 chooses a component from the template and step 140 replaces the chosen component by a chosen template. Since the steps are recursive, when back to step 130, the chosen component that was replaced is now selectable; column 7, lines 8 – 10: keep choosing components and replacement templates, and doing replacement steps until reaching the desired level of detail in the image).

Regarding dependent claim 19, Van Roy teaches said selecting includes selecting the same input image more than once (Abstract: the component can be replaced by the same template).

Regarding dependent claim 20, Van Roy teaches said transforming includes scaling and translating the selected images (column 7, line 6: reduced copy or scaling; Figures 5(a), 5(b), and 6(a) – 6(d): rotation and translation has occurred during the replacement steps).

Regarding dependent claim 22, Van Roy teaches the transforming is contractive (Figures 5(a), 5(b), and 6(a) – 6(d): each replacement step reduces the size of the selected template).

Regarding independent claim 23, Van Roy teaches a fractal generation process, including
(i) randomly selecting images (column 6, lines 61 – 64: choose a component of the drawing; column 8, lines 54 – 60: random replacement) from a set of input images (column 6, lines 41 – 53: plurality of components in the template; column 6, lines 54 – 60: a component is drawn as a line segment, a curve, an area, or an imported picture),

(ii) transforming the selected images (column 6, lines 61 – 64: a chosen component is replaced by a properly-oriented and possibly deformed or transformed copy of one of the shape's templates), and

(iii) combining the transformed images to generate a set of output images (Figure 5(b)),
wherein steps (i) to (iii) are repeated iteratively using the set of output images of each iteration as the set of input images for the next iteration, each output image providing a new fractal (column 7, lines 2 – 4 and Figure 1: step 130 chooses a component from the template and step 140 replaces the chosen component by a chosen template. Since the steps are recursive, when back to step 130, the chosen component that was replaced is now selectable; column 7,

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lines 8 – 10: keep choosing components and replacement templates, and doing replacement steps until reaching the desired level of detail in the image).

Regarding independent claim 24, Van Roy teaches a system having components for executing the steps of claim 1 (Figure 11: Drawing Engine 1120).

Regarding independent claim 25, Van Roy teaches computer readable storage medium having stored thereon program instructions for executing the steps of claim 1 (Figure 11: Image Memory 1110).

Regarding independent claim 26, Van Roy teaches image data generated by a process as claimed in claim 1 (Figure 11: System Graphics and Printing Library 1140).

Regarding dependent claim 27, Van Roy teaches said image data represents one or more V-variable fractals (Figures 5(a), 5(b), and 6(a) – 6(d)).

Regarding independent claim 28, Van Roy teaches a fractal generator, including an image selector (Figure 11: Templates 1150) for selecting M images from V input images (column 6, lines 61 – 64: choose a component of the drawing; column 8, lines 54 – 60: random replacement) from a set of input images (column 6, lines 41 – 53: plurality of components in the template; column 6, lines 54 – 60: a component is drawn as a line segment, a curve, an area, or an imported picture),

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a function selector (Figure 11: Choice Function Parameters 1160) for selecting a set of M transformation functions (column 9, lines 46 – 53: brightness, contrast, repetition, depth, and interpolation type),

at least one image transformer (Figure 11: Color Paths 1170 and Mixing Function parameters 1180) for respectively applying the selected transformation functions to the selected input images (column 6, lines 61 – 64: a chosen component is replaced by a properly-oriented and possibly deformed or transformed copy of one of the shape's templates), and

a compositor (Figure 11: Drawing Engine 1120) for composing an output image from the images output by said at least one image transformer (Figures 5(a), 5(b), and 6(a) – 6(d)),

wherein the fractal generator is configured to iteratively generate sets of V output images using the set of V output images of each iteration as the set of V input images for the next iteration (column 7, lines 2 – 4 and Figure 1: step 130 chooses a component from the template and step 140 replaces the chosen component by a chosen template. Since the steps are recursive, when back to step 130, the chosen component that was replaced is now selectable; column 7, lines 8 – 10: keep choosing components and replacement templates, and doing replacement steps until reaching the desired level of detail in the image).

Regarding dependent claim 29, Van Roy teaches said function selector is adapted to select said set of M transformation functions (column 6, lines 61 – 64: a chosen component is replaced by a properly-oriented and possibly deformed or transformed copy of one of the shape's templates) from N sets of transformation functions (column 9, lines 46 – 53: brightness, contrast, repetition, depth, and interpolation type).

Regarding independent claim 30, Van Roy teaches a fractal generation system, including an image selector (Figure 11: Templates 1150) for selecting images (column 6, lines 61 – 64: choose a component of the drawing; column 8, lines 54 – 60: random replacement) from a set of input images (column 6, lines 41 – 53: plurality of components in the template; column 6, lines 54 – 60: a component is drawn as a line segment, a curve, an area, or an imported picture), and

an image transformer (Figure 11: Choice Function Parameters 1160) for transforming the selected images (column 6, lines 61 – 64: a chosen component is replaced by a properly-oriented and possibly deformed or transformed copy of one of the shape's templates) to generate a set of output images (Figures 5(a), 5(b), and 6(a) – 6(d)),

said system being adapted to provide said set of output images as the set of input images to iteratively generate fractal image data (column 7, lines 2 – 4 and Figure 1: step 130 chooses a component from the template and step 140 replaces the chosen component by a chosen template. Since the steps are recursive, when back to step 130, the chosen component that was replaced is now selectable; column 7, lines 8 – 10: keep choosing components and replacement templates, and doing replacement steps until reaching the desired level of detail in the image).

Regarding dependent claim 31, Van Roy teaches said image transformer includes one or more image transformation modules for transforming said selected images (Figure 11: Color Paths 1170 and Mixing Function parameters 1180), and an image combination module for combining the transformed images (Figure 11: Drawing Engine 1120).

Regarding dependent claim 32, Van Roy teaches said one or more image transformation modules are adapted to scale and translate said selected images (column 7, line 6: reduced copy or scaling; Figures 5(a), 5(b), and 6(a) – 6(d): rotation and translation has occurred during the replacement steps).

Regarding dependent claim 34, Van Roy teaches a transformation selection module to select transformations to be applied to the selected images from a set of transformations (column 9, lines 46 – 53: brightness, contrast, repetition, depth, and interpolation type).

Regarding independent claim 36, Van Roy teaches fractal image data representing a combination of two or more constituent first images, each of said first images representing a random transformed combination of two or more constituent second images, each of said second images representing a random transformed combination of two or more constituent third images, each of said third images representing a random transformed combination of two or more constituent fourth images, wherein each transformation includes at least one of translation and rotation (Figures 5(a), 5(b), and 6(a) – 6(d)).

Regarding dependent claim 37, Van Roy teaches each transformation is a projective transformation, such as an affine transformation (column 7, line 6: reduced copy or scaling; Figures 5(a), 5(b), and 6(a) – 6(d): rotation and translation has occurred during the replacement steps).

Regarding dependent claim 38, Van Roy teaches each transformation includes contractive scaling (column 7, line 6: reduced copy or scaling).

Regarding dependent claim 39, Van Roy teaches the transformations are contractive on average (column 7, line 6: reduced copy or scaling; column 8, lines 54 – 60: random replacement uses probability function).

Regarding independent claim 41, Van Roy teaches image data representing a variable number n of constituent images randomly selected from a set of V images and iteratively transformed and combined in a random manner to generate said image data, with $V > 1$ and $1 < n < V$ (Figures 5(a), 5(b), and 6(a) – 6(d)).

Regarding independent claim 43, Van Roy teaches a V -variable fractal (Figures 5(a), 5(b), and 6(a) – 6(d)).

Regarding dependent claim 44, Van Roy teaches said V -variable fractal is represented by fractal image data, where V is an integer greater than one and represents the number of constituent images available for iterative combination to generate the fractal (Figures 5(a), 5(b), and 6(a) – 6(d)).

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Regarding independent claim 45, Van Roy teaches image data decomposable into at least four successive levels, wherein each level is composed of smaller data sets which are affine transformations of V basic sets (Figures 5(a), 5(b), and 6(a) – 6(d)).

Regarding dependent claim 46, Van Roy teaches the basic sets vary from level to level (Figures 5(a), 5(b), and 6(a) – 6(d)).

Regarding dependent claim 47, Van Roy teaches the transformations are contractive (Figures 5(a), 5(b), and 6(a) – 6(d)).

Regarding dependent claim 48, Van Roy teaches each of said data sets comprises a set of $V > 1$ images (Figures 5(a), 5(b), and 6(a) – 6(d)).

Regarding independent claim 49, Van Roy teaches image data representing iterative transformation and combination of at least two images selected from a set of $V > 1$ input images, wherein image data generated at each iteration represents a combination of at least two smaller images, wherein each of said at least two smaller images represents an affine or projective transformation of image data generated at the previous iteration (Figures 5(a), 5(b), and 6(a) – 6(d)).

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Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 7 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Roy¹ (US 5,831,633) in view of Van Roy² ("The Guide to Drawing with FractaSketch 2.0", 1997).

Regarding dependent claim 7, Van Roy¹ does not expressly disclose the combining of said transformed images includes superimposing said transformed images, however Van Roy¹ does disclose utilizing and owning FractaSketch 2.0. Van Roy² discloses lines (or components) intersecting and overlapping each other (page 26, Line, Invert). It would have been obvious for one of ordinary skill in the art at the time of the invention to modify Van Roy¹'s system to perform transformations where multiple components overlap each other. One would be motivated to do so because this would expand the artistic opportunities for a user.

Regarding dependent claim 40, Van Roy¹ does not expressly disclose each combination is a superposition, however Van Roy¹ does disclose utilizing and owning FractaSketch 2.0. Van Roy² discloses lines (or components) intersecting and overlapping each other (page 26, Line, Invert). It would have been obvious for one of ordinary skill in the art at the time of the invention to modify Van Roy¹'s system to perform transformations where multiple components

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overlap each other. One would be motivated to do so because this would expand the artistic opportunities for a user.

Claims 10, 12, 21, 33, 42, and 50 – 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Roy (US 5,831,633) in view of Barnsley (US 5,838,832).

Regarding dependent claim 10, Van Roy teaches said geometrical transformations include scaling and translation (column 7, line 6: reduced copy or scaling; Figures 5(a), 5(b), and 6(a) – 6(d); rotation and translation has occurred during the replacement steps). Van Roy does not expressly disclose said geometrical transformations include geometrical distortion, however Van Roy does disclose rotation (Figures 5(a), 5(b), and 6(a) – 6(d)). Barnsley discloses a transformation function that uses complex, affine, or projective transformations (column 4, lines 31 - 43). It would have been obvious for one of ordinary skill in the art at the time of the invention to modify Van Roy's system to include projective transformations. One would be motivated to do so because this would expand the artistic opportunities for a user.

Regarding dependent claim 12, Van Roy does not expressly disclose said transformation functions include projective transformations, however Van Roy does disclose rotation (Figures 5(a), 5(b), and 6(a) – 6(d)). Barnsley discloses a transformation function that uses complex, affine, or projective transformations (column 4, lines 31 - 43). It would have been obvious for one of ordinary skill in the art at the time of the invention to modify Van Roy's system to include projective transformations. One would be motivated to do so because this would expand the artistic opportunities for a user.

Regarding dependent claim 21, Van Roy does not expressly disclose said transforming also includes geometrically distorting the selected images, however Van Roy does disclose rotation (Figures 5(a), 5(b), and 6(a) – 6(d)). Barnsley discloses a transformation function that uses complex, affine, or projective transformations (column 4, lines 31 - 43). It would have been obvious for one of ordinary skill in the art at the time of the invention to modify Van Roy's system to include projective transformations. One would be motivated to do so because this would expand the artistic opportunities for a user.

Regarding dependent claim 33, Van Roy does not expressly disclose said one or more image transformation modules are adapted to geometrically distort said selected images, however Van Roy does disclose rotation (Figures 5(a), 5(b), and 6(a) – 6(d)). Barnsley discloses a transformation function that uses complex, affine, or projective transformations (column 4, lines 31 - 43). It would have been obvious for one of ordinary skill in the art at the time of the invention to modify Van Roy's system to include projective transformations. One would be motivated to do so because this would expand the artistic opportunities for a user.

Regarding dependent claim 42, Van Roy does not expressly disclose the constituent images are transformed using projective transformations at each iteration, however Van Roy does disclose rotation (Figures 5(a), 5(b), and 6(a) – 6(d)). Barnsley discloses a transformation function that uses complex, affine, or projective transformations (column 4, lines 31 - 43). It would have been obvious for one of ordinary skill in the art at the time of the invention to

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modify Van Roy's system to include projective transformations. One would be motivated to do so because this would expand the artistic opportunities for a user.

Regarding independent claim 50, Van Roy teaches image data representing a V-variable fractal (Figures 5(a), 5(b), and 6(a) – 6(d)), wherein V is an integer greater than one that determines the maximum number of basic images that can be generated (column 6, lines 41 – 53: plurality of components in the template; column 6, lines 54 – 60: a component is drawn as a line segment, a curve, an area, or an imported picture) by

(i) selecting constituent images of said image data (column 6, lines 41 – 53: plurality of components in the template).

Van Roy does not expressly disclose (ii) applying one or more projective transformations to each of the constituent images to provide basic images, however Van Roy does disclose rotation (Figures 5(a), 5(b), and 6(a) – 6(d)). Barnsley discloses a transformation function that uses complex, affine, or projective transformations (column 4, lines 31 - 43). It would have been obvious for one of ordinary skill in the art at the time of the invention to modify Van Roy's system to include projective transformations. One would be motivated to do so because this would expand the artistic opportunities for a user.

Van Roy teaches (iii) selecting constituent images of the basic images (Figure 1: Steps 130 and 140), and

(iv) iteratively repeating steps (ii) and (iii) to provide a set of basic images from which said image data can be generated by iterative random selection, transformation and combination, wherein one or more first basic images that can be generated by affine transformation of a

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second basic image are considered to provide one basic image (column 7, lines 2 – 4 and Figure 1: step 130 chooses a component from the template and step 140 replaces the chosen component by a chosen template. Since the steps are recursive, when back to step 130, the chosen component that was replaced is now selectable; column 7, lines 8 – 10: keep choosing components and replacement templates, and doing replacement steps until reaching the desired level of detail in the image; column 6, lines 61 – 64: choose a component of the drawing; column 8, lines 54 – 60: random replacement).

Regarding independent claim 51, Van Roy teaches image data (Figures 5(a), 5(b), and 6(a) – 6(d)) decomposable into a set of basic images by

(i) selecting constituent images of said image data (column 6, lines 41 – 53: plurality of components in the template).

Van Roy does not expressly disclose (ii) applying one or more projective transformations to each of the constituent images to provide basic images, however Van Roy does disclose rotation (Figures 5(a), 5(b), and 6(a) – 6(d)). Barnsley discloses a transformation function that uses complex, affine, or projective transformations (column 4, lines 31 - 43). It would have been obvious for one of ordinary skill in the art at the time of the invention to modify Van Roy's system to include projective transformations. One would be motivated to do so because this would expand the artistic opportunities for a user.

Van Roy teaches (iii) selecting constituent images of the basic images (Figure 1: Steps 130 and 140), and

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(iv) iteratively repeating steps (ii) and (iii) to provide said set of basic images from which said image data can be generated by iterative random selection, transformation and combination (column 7, lines 2 – 4 and Figure 1: step 130 chooses a component from the template and step 140 replaces the chosen component by a chosen template. Since the steps are recursive, when back to step 130, the chosen component that was replaced is now selectable; column 7, lines 8 – 10: keep choosing components and replacement templates, and doing replacement steps until reaching the desired level of detail in the image; column 6, lines 61 – 64: choose a component of the drawing; column 8, lines 54 – 60: random replacement).

Regarding dependent claim 52, Van Roy teaches at least four iterations are performed (Figures 5(a), 5(b), and 6(a) – 6(d)).

Regarding dependent claim 53, Van Roy does not expressly disclose the one or more projective transformations are selected to provide the minimum number of basic images, however Van Roy does disclose rotation (Figures 5(a), 5(b), and 6(a) – 6(d)). Barnsley discloses a transformation function that uses complex, affine, or projective transformations (column 4, lines 31 - 43). It would have been obvious for one of ordinary skill in the art at the time of the invention to modify Van Roy's system to include projective transformations. One would be motivated to do so because this would expand the artistic opportunities for a user. Examiner notes “minimum number” is not defined and therefore it is interpreted to be any arbitrary number.

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Claims 16 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Roy (US 5,831,633).

Regarding dependent claim 16, Van Roy does not expressly disclose said transformation functions and said selection probabilities are generated on the basis of one or more predetermined probability distributions. Examiner takes Official Notice that the concept of probability distributions and advantage of normalizing data are well known and expected in the art. It would have been obvious for one of ordinary skill in the art at the time of the invention to modify Van Roy's system to include a probability distribution. One would be motivated to do so because the random selection would be normalized to some degree.

Regarding dependent claim 35, Van Roy does not expressly disclose said transformation selection module is adapted to select transformations based on selection probabilities associated with said set of transformations, however Van Roy does disclose using probability function for randomly picking components (column 8, lines 54 – 60). It would have been obvious to try for one of ordinary skill in the art at the time of the invention to modify Van Roy's system to achieve a predictable result of using a probability function for randomly picking transformation by using known methods of using a probability function for randomly picking components to achieve a more random fractal design.

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey J. Chow whose telephone number is (571)-272-8078. The examiner can normally be reached on Monday - Friday 10:00AM - 5:00PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ulka Chauhan can be reached on (571)-272-7782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JJC

/XIAO M. WU/

Supervisory Patent Examiner, Art Unit 2628